

5. (Amended) The positioning device according to claim 1, wherein the pole having second [first] end edge thereof aligned with the sensor element has a first mark means formed thereon, and the sensor element has a second mark means formed thereon which is aligned with the first mark means when mounting the sensor element onto the circuit board to assure that the sensor element is located on the vertical line.

IN THE DRAWINGS:

Please amend Figures 1-5 as shown in the attached red-inked marked-up copy of the drawings as original filed.

REMARKS

The drawings have been amended to more clearly indicate the radially extending stem with reference numeral 12 and to properly designate the winding wound around each stem with reference numeral 17. Approval of the drawing changes is respectfully requested.

Claim 1 has been amended to more clearly recite the structure of the present invention. Specifically, the structure of the pole is more clearly recited as having a radially extending stem and terminating with a circumferential arcuate section. Claims 1, 2 and 5 have also been amended to improve the English syntax. The specification has been amended to provide proper antecedent basis for the revised claims and to correctly refer to the winding with reference numeral 17.

Claims 1-7 stand rejected under 35 U.S.C. 103 as unpatentable over Horng.
The Applicant respectfully traverses the rejection.

Claim 1 as amended specifically recites a plurality of annularly spaced poles, each having a radially extending stem and terminating with a circumferential arcuate section. Each arcuate section has a first end edge and a second end edge. A sensor element mounted on a circuit board is located on a vertical line extending from one of the first end edge and the second end edge of one of the poles so that the sensor element is aligned with the one of the first end edge and the second end edge. It is respectfully submitted that none of the prior art of record disclose, teach or suggest this claimed structure.

The Examiner states that Horng teaches a positioning device for a motor comprising a plurality of annularly spaced poles 3 and 4 each having a stem 5 and an arcuate section (incorrectly referenced 21), each stem 5 having a winding 21 wound therearound. First, it is respectfully submitted that the poles 3 and 4 disclosed by Horng cannot reasonably be considered to be annularly spaced as recited in claim 1. The poles 3 and 4 are clearly shown to be axially spaced. Second, it is respectfully submitted that the poles 3 and 4 disclosed by Horng cannot reasonably be considered to be poles each having a radially extending stem and terminating with a circumferential arcuate section as recited in claim 1. The stem 5 relied upon by the Examiner is not a part each individual pole, but rather is a metal cylinder upon which they are mounted. In other words, the poles 3,4 are mounted on opposite ends of the stem 5, but the "each polar plate consists of at least one plate". (col. 2, ln. 20) Further, it will be noted that the stem 5 according to Horng extends axially through the central hole of the stator base 2. Thus, it is respectfully submitted that the stem 5 cannot reasonably be considered to be a radially extending stem as recited in claim 1. While each pole 3, 4 might

reasonably be considered to terminate in a circumferential arcuate section, they do not have the radially extending stem from which to terminate.

The Examiner refers to a first edge and a second edge at the first and second poles 3, 4, respectively. It is not understood what specific structure the Examiner means. According to claim 1, the circumferential arcuate sections each have a first end edge and a second end edge. The Examiner's vague reference to a first edge at the first pole and a second edge at the second pole illustrates that the poles 3, 4 do not each have the claimed first end edge and second end edge. Further, since it is unclear what structure the Examiner considers to be the first end edge and the second end edge of each of the poles, it is respectfully submitted that Horng cannot reasonably be considered to disclose, teach or suggest the sensor element being located on a vertical line extending from one of the first end edge and the second end edge of one of the poles so that the sensor element is aligned with the one of the first end edge and the second end edge.

Therefore, in view of the above remarks, it is respectfully submitted that claim 1 recites structure that is fully patentably distinguishable over any of the prior art of record, in particular, Horng. Accordingly, withdrawal of the rejection is respectfully requested.

Claim 2 specifically recites that the pole having the first end edge thereof aligned with the sensor element has a first mark means formed thereon and that the sensor element has a second mark means formed thereon which is aligned with the first mark means to assure that the sensor element is located on the vertical line. It is respectfully submitted that none of the prior art of record disclose, teach or suggest this claimed structure.

The Examiner refers to the segmental dent 32 as "a first mark means". The Applicant respectfully disagrees with such an interpretation. The segmental dent 32 according to Horng is to provide an air gap with the permanent magnet 72 of the rotor 7. (See col. 2, Ins. 45 explaining the purpose of segmental dents 32 and 42.) Horng contains no teaching whatsoever of the segmental dent 32 functioning as a mark means of any kind. Therefore, it is respectfully submitted that the segmental dent 32 cannot reasonably be considered to be a first mark means as recited in claim 2.

The Examiner refers to the vertical side of the sensor element 61 as "a second mark means". Again, the Applicant respectfully disagrees with such an interpretation. It will be noted that Horng contains no teaching whatsoever of the vertical side of the sensor element 61 functioning as a mark means of any kind. Therefore, it is respectfully submitted that the vertical side of the sensor element 61 cannot reasonably be considered to be a second mark means as recited in claim 2.

In view of the above remarks, it is respectfully submitted that Horng cannot reasonably be considered to disclose a first mark means, formed on one of the poles, and a second mark means, formed on the sensor element, which is aligned with the first mark means to assure that the sensor element is located on the vertical line. Therefore, it is respectfully submitted that claim 2 recites structure that is fully patentably distinguishable over any of the prior art of record, in particular, Horng. Accordingly, withdrawal of the rejection is respectfully requested.

Claim 3 specifically recites that the circuit board includes a notch for securely receiving the sensor element. It is respectfully submitted that none of the prior art of record disclose, teach or suggest this claimed structure.

It will be noted that the groove 27 relied upon by the Examiner is formed in the stator base 2. As such, it is respectfully submitted that the groove 27 according to Horng cannot reasonably be considered to be a notch defined in the circuit board as recited in claim 3.

Therefore, it is respectfully submitted that claim 3 recites structure that is fully patentably distinguishable over any of the prior art of record, in particular, Horng. Accordingly, withdrawal of the rejection is respectfully requested.

Claim 4 specifically recites that the circuit board includes a third mark means which is aligned with the second mark means to provide a reference for mounting the sensor element in the notch. It is respectfully submitted that none of the prior art of record disclose, teach or suggest this claimed structure.

The Examiner refers to the groove 27 according to Horng as providing a "third mark means". Again, the Applicant respectfully disagrees with such an interpretation. It will be noted that Horng contains no teaching whatsoever of any part of the groove 27 functioning as a mark means of any kind. Therefore, it is respectfully submitted that the groove 27 cannot reasonably be considered to provide a third mark means as recited in claim 4.

Therefore, it is respectfully submitted that claim 4 recites structure that is fully patentably distinguishable over any of the prior art of record, in particular, Horng. Accordingly, withdrawal of the rejection is respectfully requested.

Claim 5 specifically recites that the pole having the second end edge thereof aligned with the sensor element has a first mark means formed thereon and that the sensor element has a second mark means formed thereon which is aligned with the first mark means to assure that the sensor element is located on the vertical line. It is respectfully submitted that none of the prior art of record disclose, teach or suggest this claimed structure.

It is respectfully submitted that the above arguments presented with respect to claim 2 fully apply to claim 5. Accordingly, it is respectfully submitted that claim 5 recites structure that is fully patentably distinguishable over any of the prior art of record, in particular, Horng, and withdrawal of the rejection is respectfully requested.

Claim 6 specifically recites that the circuit board includes a notch for securely receiving the sensor element. It is respectfully submitted that none of the prior art of record disclose, teach or suggest this claimed structure.

It is respectfully submitted that the above arguments presented with respect to claim 3 fully apply to claim 6. Accordingly, it is respectfully submitted that claim 6 recites structure that is fully patentably distinguishable over any of the prior art of record, in particular, Horng, and withdrawal of the rejection is respectfully requested.

Claim 7 specifically recites that the circuit board includes a third mark means which is aligned with the second mark means to provide a reference for mounting the sensor element in the notch. It is respectfully submitted that none of the prior art of record disclose, teach or suggest this claimed structure.

It is respectfully submitted that the above arguments presented with respect to claim 4 fully apply to claim 7. Accordingly, it is respectfully submitted that claim 7 recites structure that is fully patentably distinguishable over any of the prior art of record, in particular, Horng, and withdrawal of the rejection is respectfully requested.

The Examiner asserts that it would have been obvious to one having ordinary skill in the art to use the motivation as taught by Murata for the purposes of locating and holding the sensor element as taught by Horng. The Applicant respectfully disagrees.

First, it will be noted that Murata is concerned with an improved Hall effect type sensing device capable of easily determining the positions of components, outputting high accuracy signals, and facilitating assemblage in an automated production line. (col. 1, Ins. 36-42) To this end, the Hall effect type sensor has a frame body 10, made of synthetic resin and shaped by injection molding, which forms a connector part 3, mounting parts 6, and holding parts 11 and 12 to locate and hold the Hall effect type sensor and a magnetic circuit forming member, without the use of jigs.

The present invention, on the other hand, is concerned with properly positioning the sensor element to provide high starting torque such that the rotor of the motor used in the miniature fan can be easily activated. To this end, the sensor element is located on a vertical line extending from one of the first end edge and the second end edge of one of the poles. According to further embodiments, first, second and third mark means are provided to assure the location of the sensor element.

It will be noted that the locating of the sensor element according to Murata is completely different than according to the claims. Murata involves forming a synthetic resin frame body by injection molding which has specific structural parts designed to locate and hold the sensor element. The present invention avoids the need for injection molding a frame body of any kind. The present invention involves the use of various mark means to assure proper location of the sensing element. Murata avoids using any mark means at all.

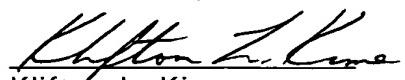
Claims 1-7 recite specific structural elements of a miniature fan and their relation to each other with proper positioning of the sensor element. Murata merely teaches how to locate and hold a sensor element using a injection molded frame body having particular structural features. Murata is not at all concerned with providing high starting torque in a miniature fan and fails to disclose, teach or suggest any particular positioning of a sensor element relative to miniature fan parts to do so. Thus, the structural modifications to the stator according to Horng that would be required to meet the limitations of claims 1-7 are not taught or suggested by Murata. Therefore, it is respectfully submitted that Murata does not provide the motivation required for a person of ordinary skill in the art to modify the structure of Horng to achieve the claimed structure of the present invention. Specifically, Murata does not provide any motivation locating the sensor element as recited in claim 1. Further, Murata does not provide any motivation regarding the first, second or third mark means recited in claims 2-7.

In view of the amendments to the claims and the foregoing remarks, it is respectfully submitted that all of the claims under consideration are allowable and the application is in condition for allowance. Accordingly, it is respectfully requested that claims 1-7 be allowed and the application be passed to issue.

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Group Art Unit: 3746
Examiner: D. Moses

If any issues remain that may be resolved by a telephone or facsimile communication with the Applicant's Attorney, the Examiner is invited to contact the undersigned at the numbers shown below.

Respectfully submitted,



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Date: April 29, 1999
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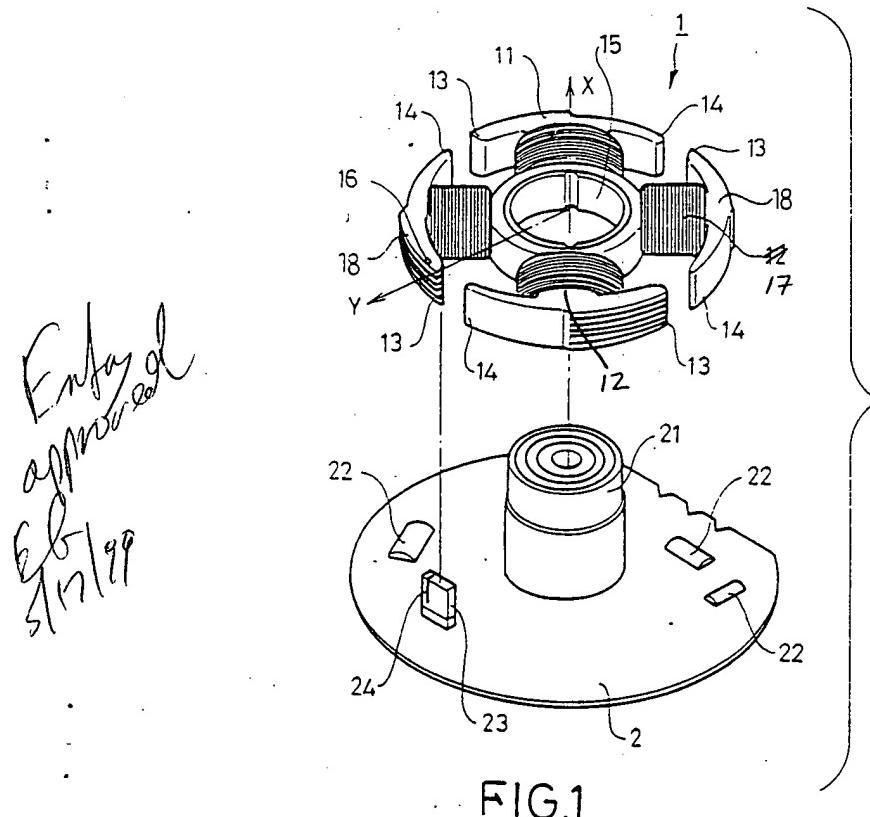


FIG.1

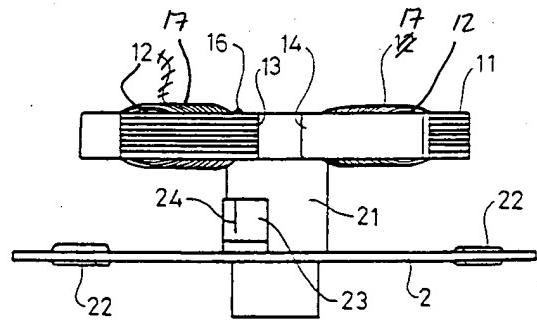


FIG.2

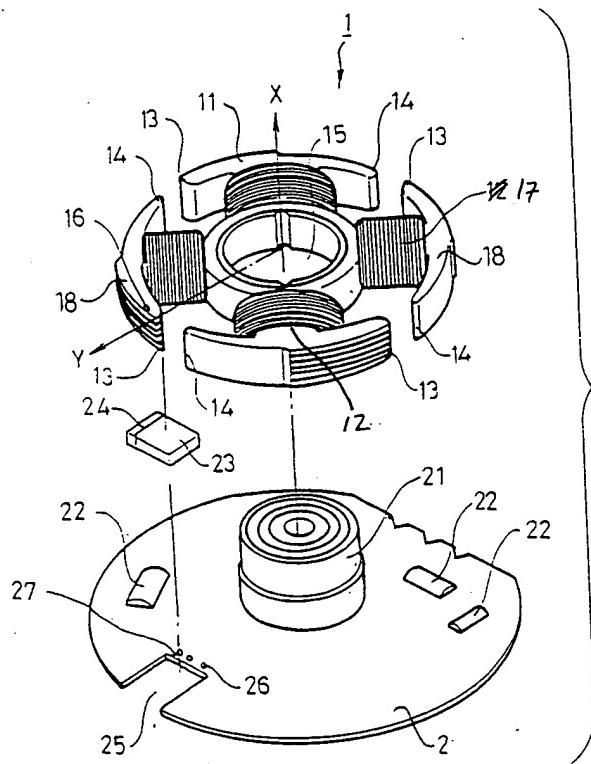


FIG. 3

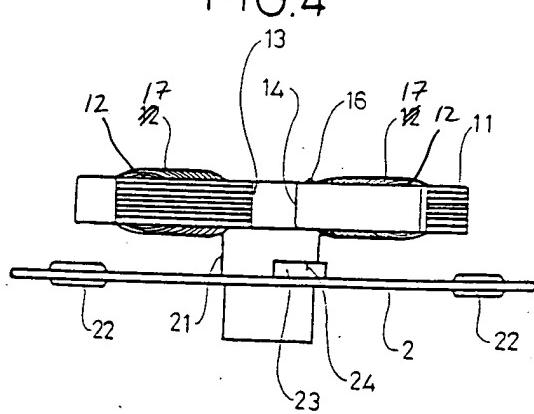
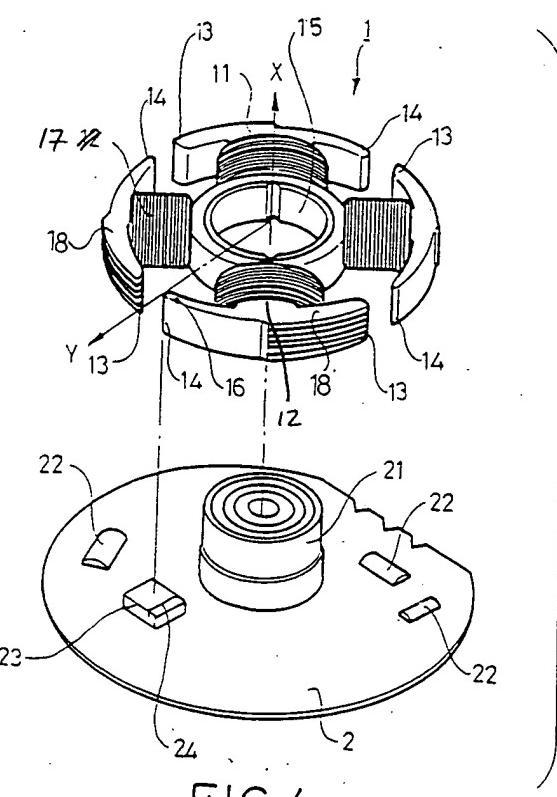


FIG. 5